PowerStocks Research Turtle Trading System

Home

As the current bull market moves into its second stage, we can no longer rely on our successful value and fundamentals strategies to drive returns. From now on relative strength and momentum will be the order of the day. When momentum dominates, value strategies take a back seat, regardless of how good a companies' fundamentals are or how cheap it is. For this reason, the Turtle Trading system is an important addition to our suite of timing and trading tools

1.INTRODUCING THE TURTLES

In mid-1983, world famous and fantastically wealthy commodities trader Richard Dennis, who turned a loan of $1,600 into over $200 million in 10 years, made a bet with his partner Bill Eckhart that he could teach a random selection of people to be great traders. After taking out an advert in the newspapers, they whittled down over 1,000 applicants to 21 and so began the training of the famous Turtle Traders.

They recruited and trained 21 men and 2 women, in two groups, one from December 1983, and the other from December 1984. Dennis trained his Turtles, as he called them, for only two weeks. They were taught a simple (although kept secret for a decade or more afterwards) trend-following system, trading a range of commodities, currencies and bond markets, buying when a market broke above the top of its recent range (and vice versa if it broke below). They were taught to cut position size during losing periods and to pyramid aggressively - up to a third or a half of total exposure, although only 24% of total capital would be exposed at any one time - into successful trades. Such a method of trading will generate losses in periods when the market is range-bound, often for months at a time, and huge profits during large market moves.

He then gave each of them a million dollars of his own money to manage, and turned each one loose on the markets. When his experiment ended five years later, his Turtles reportedly had earned an aggregate profit of $175 million. Some of those turtles began and continued careers as successful commodity trading managers, many of them making millions of dollars for themselves.

2.THE TURTLE TREND TRADING SYSTEM

The Turtle Trading systems were invented by Richard Dennis and Bill Eckhart and were completely automated systems that covered every aspect of trading and left virtually no decisions to the whims of the trader. We have taken the powerful Turtle Trading system, as taught to the Turtle traders and adapted it for use on the JSE. The original system consisted of two mechanical trading strategies, S1 and S2 with S1 being far more aggressive and short term than S2. The Turtles traded the two systems in tandem (parallel).

After faithfully recreating the rules on our systems and testing on daily JSE data going back 14 years, we have calibrated S2 appropriately for our subscribers to work on the JSE in the most optimal manner. We could not get an S1 version that matched the overall performance of our other more aggressive strategies so have decided not to implement it.

The Turtle Trading system, unlike all our other systems, looks only at PRICE action. It is essentially a trend-following system that enters long positions on price breakouts and short positions on price breakdowns. The trade initiations are governed by Price Channel Breakouts as taught by another famous trader, Richard Donchian. Richard Donchian is considered to be the creator of the managed futures industry and is credited with developing a systematic approach to futures money management. His professional trading career was dedicated to advancing a more conservative approach to futures trading. He wrote many articles on futures trading and securities and became known as the father of trend following.

3.PURPOSE BUILT

The Turtle Trading system components have been purpose-built to manage leveraged trades. That means it is suited toward trading of derivatives such as single-stock-futures, CFD's , warrants and the like. Any instruments that incorporate leverage or margin. This is not to say you cannot use it for bets in vanilla ungeared ETF's or shares, in fact you will do rather nicely from it, but to make the big bucks like the original Turtles, you need to incorporate leverage. Even if you start with a tiny amount of funds and use leverage, you are likely to outperform someone with a large amount of starting capital that does not use leverage. You may want to get used to the first few trades with ungeared instruments but we advise you move to leverage as soon as possible if you really want to knock the socks of performance.

The Turtle System adapted for the JSE by PowerStocks Research is also purpose-built and optimised to trade in the JSE TOP40 index. Any instrument that mirrors the JSE TOP 40 will be suitable. Either a ungeared SATRIX40 ETF share, or a TOPI warrant, or a SATRIX40 Single stock future or a SATRIX40 Contract-for-Difference (CFD). If you really want to play, and have a minimum of R25,000 to make per trade, then your best option is the new Standard Bank TOP40 Index Future (ALSI Jun-10)

4.DONCHIAN CHANNEL AND FAITH LINES

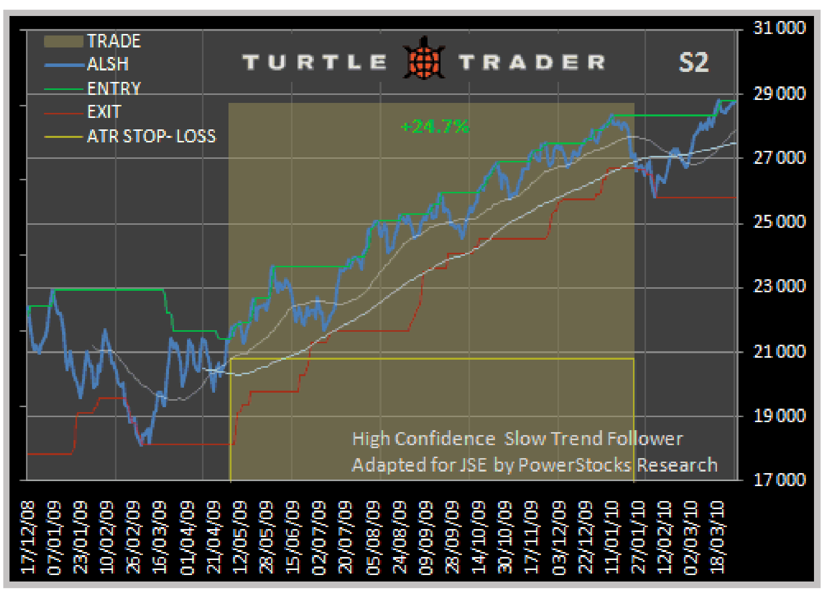
The Turtle system envelops a securities' price with a Donchian channel which has an upper-bound equal to the high of the last x days and a lower-bound equal to the low of the last y days. Generally x is greater than y. The original "fast" Turtle trading system, S1, used a 20-day high breakout (defined by the high of the preceding 20 days) to enter trades and a 10-day low (defined by the low of the preceding 10 days) to mark the trade exit or initiation of a short position. The slower less aggressive Turtle system, S2, used 55 days and 20 days respectively.

These values do not work that well on the JSE and we have calibrated others (which shall remain propriatary) for optimal risk-adjusted returns and overall performance re win ratios, gain/loss ratios etc.

A little bit of Faith goes a long way...

A former Turtle, Curtis Faith, improved the performance of the original Turtle strategies by adding a further filter to the BUY descision, namely that the 40-day moving average of the targeted security or commodity being traded is greater than the 200-day moving average. We put this improvement to the test, but obviously had to find values that worked best with our own S2 system. We confirmed that the addition of this "Faith Filter" significantly improved the win percentage and gain/loss ratios of the system. It basically prevented the strategy from entering trades on breakouts that occured in bearish markets (bear traps.) Again, the values we used for the slow and fast moving average shall remain propriatary. The addition of the "Faith Filter" raised the win percentage from 68% to 76% and improved the gain/loss ratio from 8:1 to over 25:1.

The PowerStocks Turtle Trader chart as shown on the JBAR report for subscribers appears below showing the ALSH index together with its red (low) and green (high) Donchian channels. When the JSE breaks out above the green line a long trade is initiated (or a short trade closed). When the JSE drops below the red Donchianline, the long trade is closed, or a short position on the JSE initiated, or both. The brown shaded area in the chart represents the vested period for the long trades whilst the unshaded areas are vested periods for short trades.



The "Faith Lines" are shown as a fast (shorter term) moving average (darker line) and the slower (longer term) moving average (lighter line) within the Donchian Channel. The strategy will only initiate long trades when the fast line is above the slow line and the short trades should only be initiated when the fast Faith Line is below the slow Faith Line.

You can see that the Donchian channel widens with JSE volatility and narrows as it starts trending nicely. As you have gathered, the strategy enters the market on NEW HIGHS and exits on NEW LOWS. Because of the inherent danger of entering the market on new highs, the Turtle strategy also incorporates the use of an automated STARTING STOP LOSS shown by the yellow line in the chart

5.TURTLE STOP LOSSES

There is a saying that "There are old traders and bold traders, but there is no such thing as old, bold traders!". Traders that don't use stops go broke. The Turtles always used stops.

The Turtle Strategy computes a stop-loss based purely on the TRADE ENTRY price. It does not use a traditional trailing stop loss as the lower-bound Donchian line provides this function. The purpose of the initial stop loss, shown by the yellow line in the above chart is to limit *initial* trade losses where a trade goes against you soon after entry. This is especially required if you are trading leveraged instruments, to limit your capital loss. If you initiate a trade and the share drops 5%, you could easily have 50% of your capital wiped out, and the share needs to gain 100% for you to recover this loss!

The initial stop-loss is computed at trade entry by using the Average True Range (ATR) of the ALSH on the day. The True Range (TR) is a measure of volatility introduced by Welles Wilder in his book: "New Concepts in Technical Trading Systems". It is the greatest of the following:
-current high less the current low.
-the absolute value of the current high less the previous close.
-the absolute value of the current low less the previous close.

The ATR used by the original Turtle system is a 20-day average of the TR computed above. Simply put, a stock experiencing a high level of volatility will have a higher ATR, and a low volatility stock will have a lower ATR. It is thus an ideal tool for setting appropriate stop-losses. During periods of high volatility the stops will be widened due to larger values of ATR which would reduce risk of premature exit.

The initial stop loss is computed as Price-N*ATR. Although the Turtles used N=2, we found that N=2 and N=3 worked equally as well. We have decided to select N=2. You can see from the above chart that as soon as a trade is opened, a yellow line representing the pre-calculated stop-loss (trade entry price less 2*ATR) pops up onto the chart. If the share price drops below the yellow line, the trade is closed out. In most cases, the JSE rises nicely soon after the trade and eventually the red Donchian line rises above the yellow initial stop-loss line and takes over responsibility for closing out the trade. Again, it is important to note that the initial stop-loss is there to protect the trade from going deeply South right after the market entry. The red line governs trade exits in most other cases.

Our tests have shown that the incorporation of the initial stop-loss impairs long term performance, slightly of the strategy, although it does eliminate some gut wrenching initial drawdowns that many conservative subscribers may not be able to stomach. We suggest using the stop-loss if you have highly geared trades (more than 6 times) and to ignore it if you use ungeared bets such as a straight investment in a SATRIX40 or SATRIX RESI or the new Betta Beta equally weighted TOP40 index.

6.PYRAMIDING

This is a very powerful technique to accelerate returns for lower risks. If you have entered a trade and eventually the red line rises above the yellow line (i.e. we are safe now from risk of capital loss) then if you see more Donchian breakouts, then provided the JSE has moved up in steps of N*ATR, you add to your positions in the market for up to three more occasions, ensuring you never have more than 30% of your total trading capital vested in this one trade though. Pyramiding in this fashion almost doubles the return of the trading strategy.

7.POSITION SIZING

The Turtles were trained strict position sizing rules to manage their risks. If you are a beginner you are advised to take note of what we are going to describe to you now. It is an important survival skill for trading.

As a general rule, the Turtles were taught never to risk more than 1% of their entire trading capital on a single trade. But they traded aggressive S1 strategies across multiple diversified markets. Our timing systems are far more sedate and reliable and we won't have tons of positions open at any one time. For this reason we recommend you use 5% as a general rule for most of our trading systems.

Let us assume you have R50,000 trading capital. This means you will not risk more than 5% or R2,500 per individual trade. With the Turtle S2 Trading system, the risk of the trade can be easily defined by its initial stop loss size which is 2*ATR. Lets say the TOP40 is trading at 26,000 and 2*ATR is computed as 960 at time of receiving a BUY signal. That means we can tolerate a loss of 960/26,000 = 3.69% before we pull the plug and get out. We take the R2,500 you are willing to place at risk and divide it by the 3.69% to get our allowed market exposure (trade size) of R67,750.

Here is the simple formula for calculating your position sizing:

MAX EXPOSURE = (TRADE CAPITAL * 5%) * ENTRY PRICE / (2*ATR)

Now if the instrument you will use to effect the trade is a warrant say with 5 x gearing then that means you only have to outlay R13,550 of your trading funds to effect the trade. If it is something that is 10x geared, you will only have to lay out R6,775 for your trade. Unless you are trading ungeared, DO NOT lay out the whole MAXIMUM EXPOSURE of R67,750 as you will be exposing yourself to more than the allowable risk we computed.

FUNDS TO PLACE IN MARKET = MAX EXPOSURE / GEARING

Please read this section again. It is extremely important. Losses are a part of life of trading and without risk management you can quickly go to the poorhouse, especially when leverage is being used. It does not matter that we have robust and reliable timing and trading systems, you still have to manage your risk with a stop-loss and proper position sizing as described above.

8.HISTORICAL PERFORMANCE

The modified Turtle Trading strategy, S2, was created by us with over 14 years of daily JSE data to ensure optimal values for x and y for the Donchian channel and for the periods of the slow and fast "Faith Lines". This covers more than enough business cycles and bull/bear markets to effectively test the strategy. The table below describes the main performance characteristics of our new trend following system:

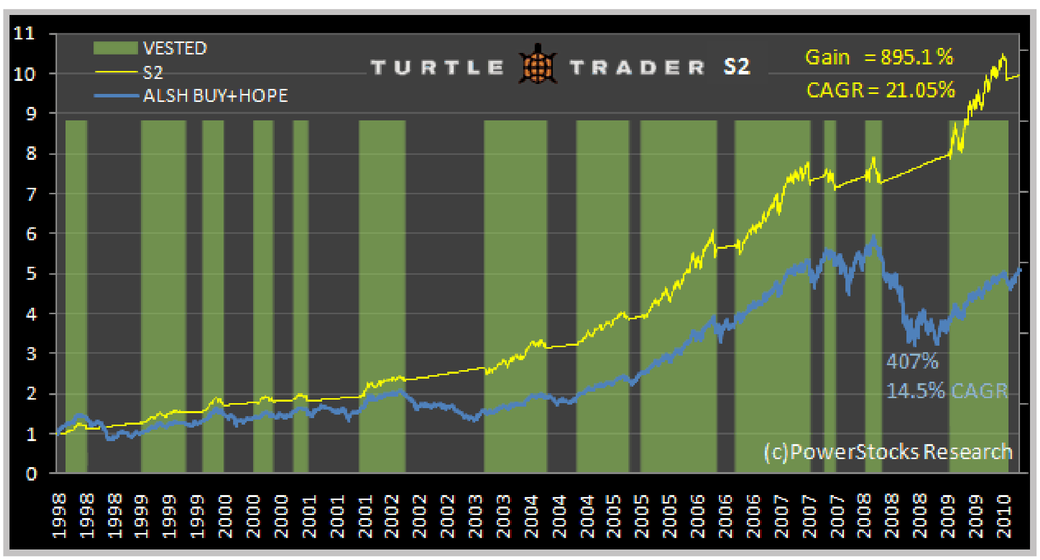
TURTLE	TRADER	S2	
Breakout	Donch	Avg Win	19.43
Exit	Donch	Win Sharpe	1.78
% Gain	421.1	Avg Loss	-2.76
TRI	5.21	Loss Sharpe	3.47
% Vested	52.5%	Max Loss	-3.87
# Trades	13	Pts Won	194.31
Wins	10	Pts Lost	-8.27
Losses	3	Net Pts	186.03
% Wins	76.9%	Gain/Loss	23.48

Trades is how many trades occurred over 12 years. % Wins is what percentage of trades resulted in a profit. Gain/Loss is all the accumulated percentage points gained in the winning trades divided by those lost in the losing trades. Average Win is average size of the winning trades. Average Loss is average size of the losing trades. Max Loss is worst loss that was incurred. TRI is the total return after 12 years of trading with starting capital of R1.00. Net points is cumulative percentage points won less total points lost. % Vested is what % of total time the strategy had funds in the JSE.

This is an incredible set of credentials, most notably the low average loss and max loss both of which have very high sharpe ratios showing that they do not vary wildly.

9.A GREAT TRENDING TOOL

The 14-year chart below shows the total return index (TRI) of S2 versus an ALSH buy and hold (hope) strategy. The vested periods are also shown to illustrate how nicely this strategy latches onto uptrends and avoids downtrends. We assumed the S2 strategy had access to Prime less 4% interest during the unvested periods. That this performance was accomplished using daily ALSH price information only astounds us as we have always been advocates that breadth date works best.



Lets examine the actual trades themselves:

ENTRY	EXIT	DAYS	WIN	LOSS	OUT
23-Feb-98	27-May-98	94	9.99		
08-Feb-99	26-Aug-99	198	19.18		-20.7%
17-Nov-99	21-Feb-00	94	9.55		5.8%
12-Jul-00	11-Oct-00	89	1.18		-5.7%
11-Jan-01	14-Mar-01	63		-2.03	7.4%
13-Nov-01	11-Jun-02	208	21.26		4.6%
18-Jun-03	24-Mar-04	276	18.24		-19.4%
19-Aug-04	13-Apr-05	234	19.94		3.2%
13-Jun-05	22-May-06	339	43.38		9.2%
21-Aug-06	27-Jul-07	336	28.04		10.7%
02-Oct-07	19-Nov-07	47		-3.87	9.8%
09-Apr-08	20-Jun-08	71		-2.38	7.3%
06-May-09	26-Jan-10	260	23.55		-28.8%
	AVERAGE	177.6	19.4	-2.8	-0.01

The "OUT" column shows the JSE returns while S2 was sitting in cash. As you can see there were 4 big crashes mixed with 8 "sub-inflation" gains. Arguably, the S2 strategy was matching the JSE gains in interest during these 8 periods, without having to endure the volatility the JSE displayed during these times.

One can see the power of leverage here. The Turtles believed in hanging onto their geared trades for as long as possible, even if to sacrifice gains at the end, in order to latch onto those long strong trends. If you were playing 5 or 10x leveraged instruments during those 25% and 43% up-hauls you can get an idea how the Turtles made their millions and did not mind suffering the few small losses to get there.

10.MORE INFORMATION

To read more about this fascinating story and this powerful trend trading strategy, read

1. The original Turtle trading rules (PDF)
2. Investopedia Article : Turtle Trading : The Market Legend
3. The original Turtles Story as told by the original turtles

For a really, really fun, riveting and fascinating book (the definitive book) on the Turtles and how a piano player, a ballet dancer and other diverse characters in the program made hundreds of millions of dollars using the Turtle Trading System, get The Complete Turtle Trader by Michael Covel, best selling author of "Trend Following". We highly recommend them both as reading.

11.TURBO-CHARGED TURTLE TRADER

When designing, back-testing and building Turtle-S2 we got to thinking about what would happen if we used the superior entry points of the Big Dipper system instead of the Donchian breakouts to initiate trades. S2 will always give up 20-30% of the gains of a bull run waiting for the Donchian breakout, but Big Dipper wastes no time pinpointing a trough and climbing in. It would make logical sense that using Big-Dipper entries with S2 could really turbo-charge trade performance.

The two systems, as tested over the same period appear side-by-side below.

TURTLE TRADER S2				The Big-Dipper (80 day forced exit)			
Breakout	Donch	Avg Win	19.43	Breakout	BDIPR	Avg Win	14.88
Exit	Donch	Win Sharpe	1.78	Exit	80-days	Win Sharpe	1.60
% Gain	421.1	Avg Loss	-2.76	% Gain	775.6	Avg Loss	#DIV/0!
TRI	5.21	Loss Sharpe	3.47	TRI	8.76	Loss Sharpe	#DIV/0!
% Vested	52.5%	Max Loss	-3.87	% Vested	40.2%	Max Loss	0.00
# Trades	13	Pts Won	194.31	# Trades	16	Pts Won	238.11
Wins	10	Pts Lost	-8.27	Wins	16	Pts Lost	0.00
Losses	3	Net Pts	186.03	Losses	0	Net Pts	238.11
% Wins	76.9%	Gain/Loss	23.48	% Wins	100.0%	Gain/Loss	#DIV/0!

These are two pretty impressive trading strategies, with S2 slightly over-performing the ALSH buy-and-hold strategy for only being vested 52.5% of the time. All our tests assumed 0.5% brokerage in and out and acting on signals the day AFTER seeing them. For non-vested periods when the systems were sitting on the sidelines, we did not assume any interest earned in the above tables.

As you saw from the Big Dipper research note, fixed interest at prime less 4% more than doubled returns to over 1,550% (which is a TRI of 16.5). The incorporation of interest cranks the Turtle S2 TRI up to 9.95 (895% return). Again, we have to marvel at the Big Dipper's track record of 100% success rates when using 80 trading days (exclude weekends and public holidays) as the holding period.

A super powerful strategy can be executed by combining the standard S2 Turtle strategy with the powerful Big Dipper strategy. We will call it S3.

We start by taking whichever signal gets thrown our way first.

Let's assume it is a Big Dipper signal we get first. We always hold it for the full 80 trading (working) days, regardless of how many times the JSE breached the lower Donchian line or the ATS stop-loss. But when the 80-days was up, we would switch to the lower Donchian line to govern our exit. If the JSE was trading above the lower Donchian line when it was time to exit Big Dipper, we would simply resume the trade, otherwise we would exit on day 81.

When the signal that comes along to start our trade is a S2 (ie a Donchian breakout with Faith criteria met) we would trade normal Turtle-S2 rules. This means we would look to exit when the JSE drops below the lower Donchian line.

If we are busy with a trade, we ignore any other signals we see. The results of this new strategy were highly impressive as shown below:

ENTRY	EXIT	DAYS	GAIN	CAGR	OUT	TURTLE TRADER+ BACKTEST RESULTS			
13-Jan-98	27-May-98	134	28.55	98.2		Breakout	50	Avg Win	23.32
28-Sep-98	26-Aug-99	328	35.21	39.9	-29.0	Stop Loss	38	Win Sharpe	1.64
07-Oct-99	21-Feb-00	134	11.19	33.5	4.2	% Gain	1,289.6	Avg Loss	-6.74
20-Apr-00	11-Oct-00	171	9.11	20.5	-14.19	TRI	13.9	Loss Sharpe	14.19
20-Oct-00	14-Mar-01	144	5.10	13.4	0.34	% Vested	75.0%	Max Loss	-7.38
16-May-01	05-Jul-01	49	-6.59	-39.8	8.62	# Trades	17	Pts Won	326.5
25-Sep-01	11-Jun-02	256	40.18	61.9	-12.54	Wins	14	Pts Lost	-20.2
18-Mar-03	28-Mar-03	10	-7.38	-93.9	-24.73	Losses	3	Net Pts	306.3
26-May-03	24-Mar-04	298	25.12	31.6	7.95	% Wins	82.4%	Gain/Loss	16.15
12-Aug-04	13-Apr-05	241	24.15	38.8	-0.46				
26-May-05	22-May-06	356	48.11	49.6	5.26				
26-May-06	27-Jul-07	421	35.18	29.9	5.37				
08-Aug-07	14-Dec-07	126	5.36	16.3	1.78				
24-Jan-08	20-Jun-08	146	14.98	41.8	-7.82				
14-Oct-08	20-Feb-09	126	-6.25	-17.0	-27.68				
11-Mar-09	26-Jan-10	315	38.84	46.3	-1.46				
Average		203.4	18.8	23.2	-5.9				

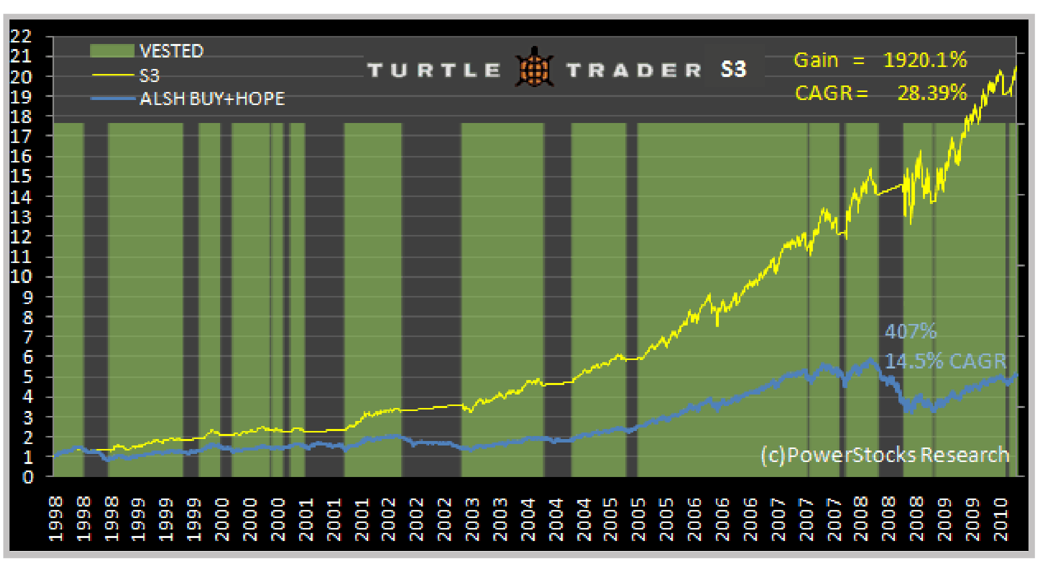
Turbo-charged Turtle Trend Trading Strategy invented by PowerStocks Research.

1. Take either BIG-DIPPER (BD) or Turtle-S2 (T2) BUY signal, whichever comes first.
2. If BD signal starts the trade then hold for full 80-day period before proceeding to step 3.
3. Exit trade when JSE breaks below the shown DONCHIAN sell line. Restart at step-1.

TURTLE TRADER

We have been doing this stuff for quite some time now and must admit this gave us a jolt. But after checking and re-checking, the results are undeniable and consistent enough not be be blamed on chance or luck. The Turbo-Charged Turtle Trend Trading Strategy (do not tempt us to acronym this!) more than quadrupled the TRI of the original Turtle S2 system and nearly DOUBLED the performance of the already unbelievable Big-Dipper.

The total returns chart below includes interest earned on capital when we are sitting out the market. All brokerage and commissions have been accounted for.



This strategy just more than doubles the total return of S2, but this comes at a price - S2 is only exposed to the JSE 52% of the time whereas S3 is vested for 75% of the time. This means S3 is exposed to more market risk, but the additional gains for that 25% extra exposure are incredible.

No strategy we have ever seen that stays in the JSE for over 70% of the time comes HALF as close to this performance. S3 really knows when to stay on the sidelines. Having extracted every conceivable ounce of yield from the JSE, once it exits you just know the JSE is going south. Just look at the "OUT" column in the above table to see what returns were posted by the JSE while we were sitting in the safety of our bank accounts - it is not a pretty sight is it? In fact we would say, as practised by the original Turtles, that it would be worth your while SHORTING the market when this system scrambles for cover!

The average compound annual growth rate (CAGR) of Turtle-S3 is a whopping 28.2%. In fact, winning trades were averaging 40% compound growth with the worst winning trade still posting 13% CAGR. Finally a success rate of 82.4% and an eye-popping gain-to-loss ratio of 16-to1 says it all.

13.CONCLUSION

We just know that Turtle-S2 and S3 are going to be a hit with traders and investors alike. The holding periods are long, so stick to lower geared products to be able to stick out some of the draw-downs. Remember, the Turtle strategy is to hold onto those geared trades for as long as possible, even if it means giving up a good chunk of your returns before a final exit occurs. Combining leverage with long trades and large gains is what made millions for the Turtles.

We suspect the Turtle-S3 trading signal could be quite a good barometer for subscribers, showing them if it's time to be playing in the markets or not. If S3 is out the market, we suggest you follow suit!

S3 is rather infrequent with one signal every 8.5 months on average. Instead of waiting for the next signal, you might want to look at where we are in the current trade and "Jump aboard the train". After all, when vested, S3 is telling us we are in a strong up-trending market, so you do not want to miss out all the gains while waiting for the next signal.

This is the first system we have come across (other than the LBYC long-term investment timing model) where the odds are pretty good in your favour when shorting the JSE when it is on the sidelines. Looking at the above chart, just like LBYC, you can be assured S3 will keep you out of crashes and recessions!

With S3, pyramiding becomes easy. You just keep adding to your trade when you see more S2 and Big Dipper signals in the JBAR reports!